

3. (Amended) [A process monitor according to claim 2] A process monitor for determining process parameters during a plasma etch process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter; and

a beam forming module operable to collimate the emitted optical radiation wherein the collimated optical radiation is incident normally to the wafer.

4. (Amended) [A process monitor according to claim 1] A process monitor for determining process parameters during a plasma etch process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter wherein a spectrograph integration period is synchronized to the flash lamp.

5. (Amended) [A process monitor according to claim 1] A process monitor for determining process parameters during a plasma etch process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter wherein a second signal

representative of optical radiation reflected from the wafer during a period when the flash lamp is not emitting broad-band optical radiation is processed by the data processing element and subtracted from the first signal to determine a process parameter.

6. (Amended) A process monitor according to claim [1] 5 wherein a third signal representative of the intensity of the emitted radiation is processed by the data processing element to normalize the first signal.

8. (Amended) A process monitor according to claim [1] 5 wherein the process parameter further comprises a thickness of a layer carried by the wafer.

9. (Amended) [A process monitor according to claim 1] A process monitor for determining process parameters during a plasma etch process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter; and

a beam forming module operable to collimate the emitted optical radiation

wherein the process parameter further comprises an etch rate of a layer carried by the wafer.

10. (Amended) A process monitor according to claim [1] 9 wherein the process parameter further comprises a process endpoint.

13. (Amended) [A process monitor according to claim 12] A process monitor for determining process parameters during a plasma deposition process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter; and

a beam forming module operable to collimate the emitted optical radiation wherein the collimated optical radiation is incident normally to the wafer.

14. (Amended) [A process monitor according to claim 11] A process monitor for determining process parameters during a plasma deposition process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter and wherein a spectrograph integration period is synchronized to the flash lamp.

15. (Amended) [A process monitor according to claim 11] A process monitor for determining process parameters during a plasma deposition process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter and wherein a second signal representative of optical radiation reflected from the wafer during a period when the flash lamp is not emitting broad-band optical radiation is processed by the data processing element and subtracted from the first signal to determine a process parameter.

16. (Amended) A process monitor according to claim [11] 15 wherein a third signal representative of the intensity of the emitted radiation is processed by the data processing element to normalize the first signal.

18. (Amended) A process monitor according to claim [11] 15 wherein the process parameter further comprises a thickness of a layer carried by the wafer.

19. (Amended) [A process monitor according to claim 11] A process monitor for determining process parameters during a plasma deposition process of a wafer, the process monitor comprising:

a flash lamp emitting a broad-band optical radiation;

a spectrograph responsive to optical radiation reflected from the wafer;

a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter and wherein the process parameter further comprises a deposition rate of a layer carried by the wafer.

20. (Amended) A process monitor according to claim [11] 19 wherein the process parameter further comprises a process endpoint.

23. (Amended) [A method of monitoring a process as recited in claim 22] A method of monitoring a process and for determining process parameters during a plasma process of a wafer, the method comprising:

providing a flash lamp emitting a broad-band optical radiation;

providing a spectrograph responsive to optical radiation reflected from the wafer;

providing a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter; and

providing a beam forming module operable to collimate the emitted optical radiation wherein the collimated optical radiation is incident normally to the wafer.

24. (Amended) [A method of monitoring a process as recited in claim 22 further comprising] A method of monitoring a process and for determining process parameters during a plasma process of a wafer, the method comprising:

providing a flash lamp emitting a broad-band optical radiation;

providing a spectrograph responsive to optical radiation reflected from the wafer;

providing a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter and synchronizing a spectrograph integration period to the flash lamp.

25. (Amended) [A method of monitoring a process as recited in claim 21 further comprising] A method of monitoring a process and for determining process parameters during a plasma process of a wafer, the method comprising:

providing a flash lamp emitting a broad-band optical radiation;

providing a spectrograph responsive to optical radiation reflected from the wafer;

providing a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter and processing a second signal representative of optical radiation reflected from the wafer during a period when the flash lamp is not emitting broad-band optical radiation and subtracting the processed second signal to determine a process parameter.

26. (Amended) A method of monitoring a process as recited in claim [21] 25 further [comprising] processing a third signal representative of the intensity of the emitted radiation to normalize the first signal.

28. (Amended) A method of monitoring a process as recited in claim [21] 25 wherein the process parameter further comprises a thickness of a layer carried by the wafer.

29. (Amended) [A method of monitoring a process as recited in claim 21] A method of monitoring a process and for determining process parameters during a plasma process of a wafer, the method comprising:

providing a flash lamp emitting a broad-band optical radiation;

providing a spectrograph responsive to optical radiation reflected from the wafer;

providing a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter wherein the process parameter further comprises an etch rate of a layer carried by the wafer.

30. (Amended) [A method of monitoring a process as recited in claim 21] A method of monitoring a process and for determining process parameters during a plasma process of a wafer, the method comprising:

providing a flash lamp emitting a broad-band optical radiation;

providing a spectrograph responsive to optical radiation reflected from the wafer;

providing a data processing element for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter wherein the process parameter further comprises a deposition rate of a layer carried by the wafer.

31. (Amended) A method of monitoring a process as recited in claim [21] 30 wherein the process parameter further comprises a process endpoint.